VARIABLES

In This Chapter...

Variables **8–2**
Inserting a Variable 8–2
Editing a Variable 8–3
String Variables **8–4**
String Variable Setup 8–4
Setting String Variable Value 8–6
Numeric Variables **8–9**
Numeric Variable Setup 8–9
Setting Numeric Variable Value 8–11

Variables

ViewMarq supports Dynamic messages that can contain multiple embedded data variables in each message. These variables may display string or numeric PLC register data updated in real time by the PLC, by ASCII string commands or by writing directly to Modbus addresses in the ViewMarq memory.

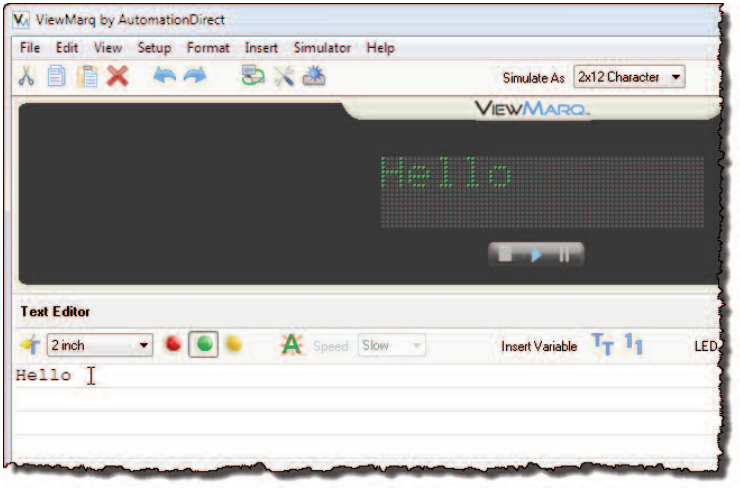
Variables may be used multiple times in one command yet formatted differently each time. Variables may be used in as many different command strings as needed and formatted in any way required for that string. For example, Numeric Variable #1 may be displayed as 500.0 mm in one string and or 50.00 cm just by changing the implied decimal places.

NOTE: *The display format options such as color or character set for variables is set in the static text string where the <DEC> and <STR> commands are used; that is, color or character set commands do not work with, <SETS> or <SETV> commands.*

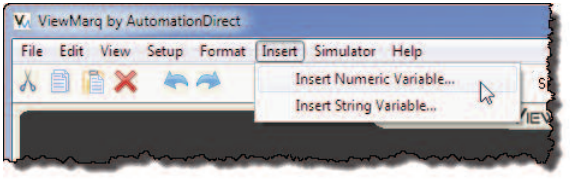
Inserting a Variable

To insert a variable into a message:

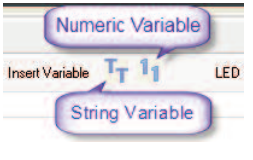
1) Click in the area of the Text Editor where you want the variable to appear.



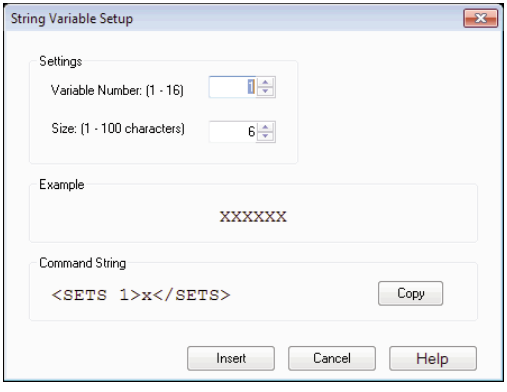
2) Select either Insert Numeric Variable or Insert String Variable from the Insert dropdown menu.


ViewMarq by AutomationDirect
File Edit View Setup Format Insert Simulator Help
Insert Numeric Variable...
Insert String Variable...

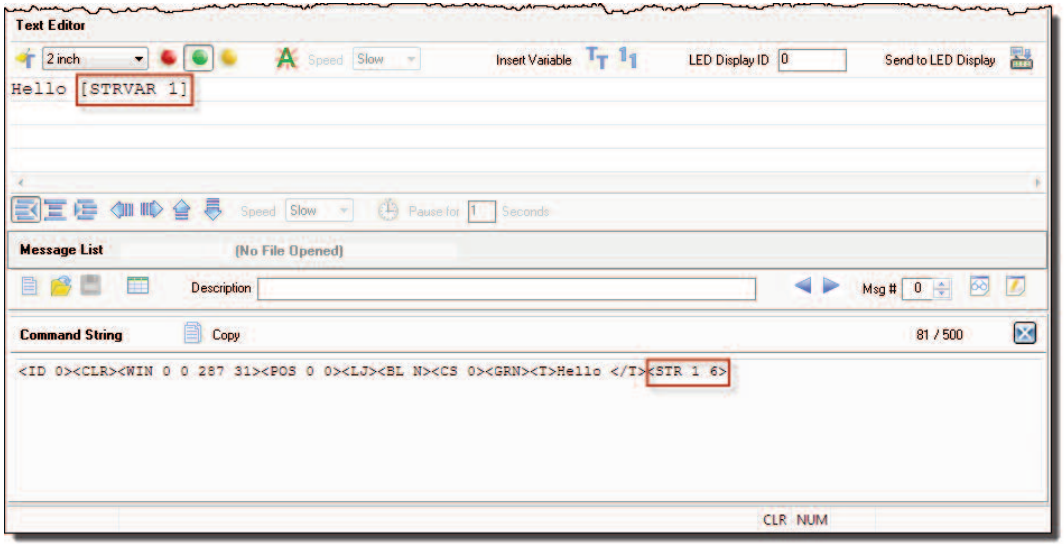
...or select the appropriate Variable toolbar button.



The Variable Setup Dialog will open.



3) Select Insert to insert the variable into the Text Editor and into the Command String



Editing a Variable

To edit a variable in a message, simply double click on the variable in the Text Editor and the setup window will open.

String Variables

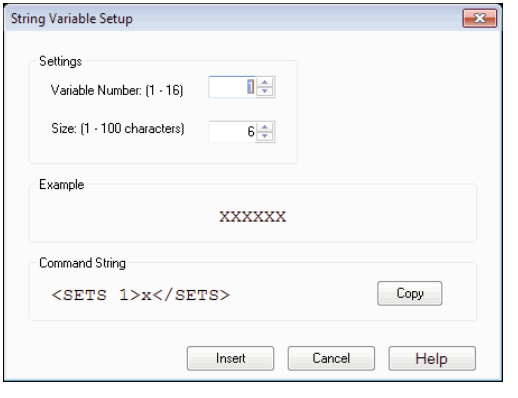
String Variables are used to update ASCII text in a message without resending the entire message.

There are a few key items to remember when using String variables:

- String Variables can be inserted anywhere in the message.
- Up to 16 string variables can be used in a single message.
- 16 individual string variables are available for use
- String variables can be up to 100 characters in length.
- If a string variable value has not been set, then a number of blank spaces will be displayed equal to the number of characters in the variable in that portion of the message.
- The <SETS n>string</SETS> command string is used to set a string variable. This is covered later in this chapter.

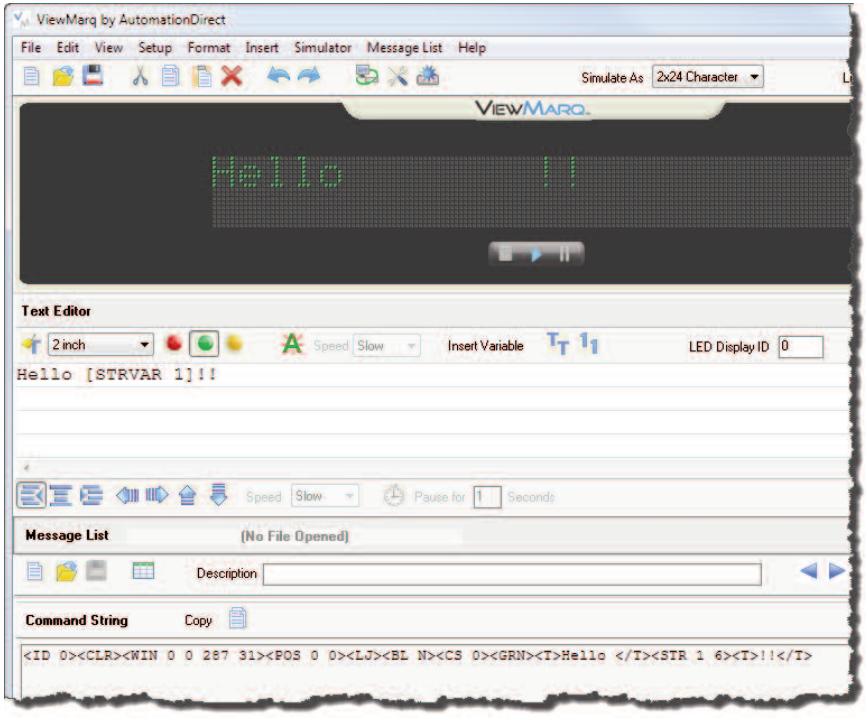
String Variable Setup

The String Variable Setup dialog is shown below.



1) Select the Variable Number (1 to 16).
2) Select the Size of the string (100 characters maximum).
3) Select the **Copy** button to copy the <SETS n>string </SETS> command onto the PC clipboard. (This will be used later to set the value of the string from the PLC.)
4) Select the **Insert** button to insert the variable placeholder into your message.

The result can be seen below. The value of the string variable is not set, so there are spaces in the area that it occupies.



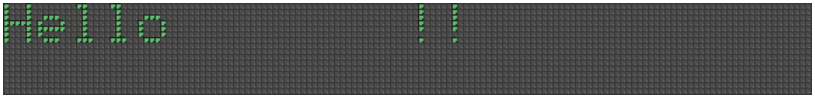
5) Copy and Paste the Command String into the PLC instruction.

Send (Port:2)	ASCII
Type	Static
Byte Swap	None
Terminate Code	CR
Send Message	
"<ID 1><CLR><WIN 0 0 287 31><POS 0 0><LJ><BL N><CS 0><GRN><T>Hello </T><STR 1 6><T>!!</T>"	

ATTENTION

Attention!: Command Strings should be sent at least 100 ms apart.

When the instruction is executed, the display will look like this.



Setting String Variable Value

The value of the String Variable gets set from the PLC in one of two methods::

1) ASCII Command String - <SETS n>string</SETS>

2) Modbus Register Write

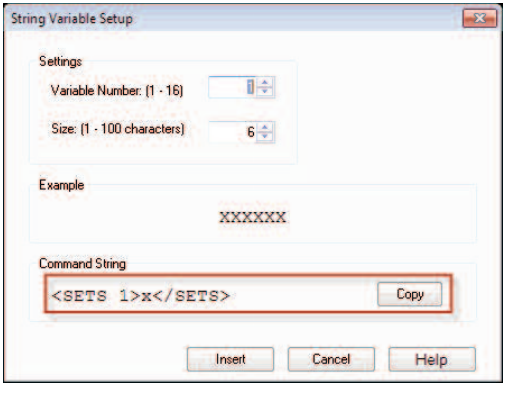
Using an ASCII Command String to Update the String Value

To update String Variable data using an ASCII Command string, use the Set String command <SETS n>string</SETS>

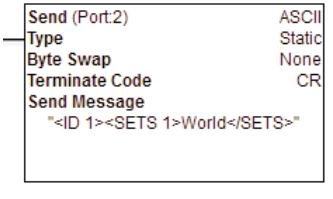
Where n is the string number (1 – 16) and string is the actual text that you wish to display.

Example 1 – Set String Value

1) From the String Variable Setup dialog copy the Set String command.

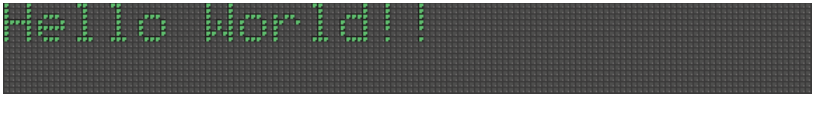


2) Paste this Command String in the PLC instruction; Add the ID command and the string = "World" to be displayed



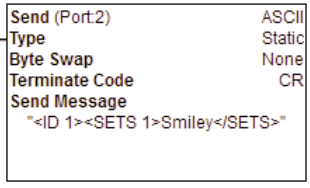
ATTENTION **Attention!: Variables should be updated no more than every 100ms.**

When the above instruction is executed, the display will now look like this.



Example 2 – New Set String Value

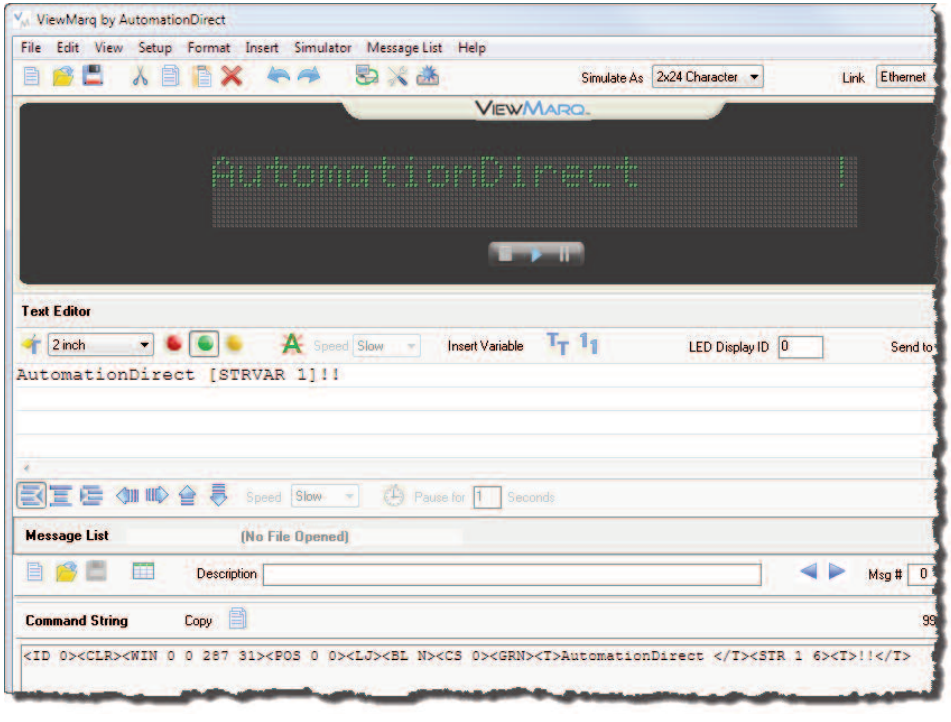
If the instruction below with a different string=”Smiley” is executed…



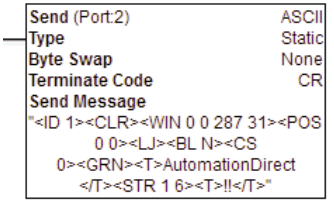
...the message will look like this.

Example 3 – String Variable used in another String Command

If another String is sent to the ViewMarq LED Display using the same String Variable, the same value will be displayed.



Copy and Paste the Command String into the PLC instruction.



When the above instruction is executed, the display will look like this.

Variable #1 is still equal to "Smiley" until it is set by another <SETS> command.

NOTE: *The conditions for executing the instructions above depend upon the controller used. The above instructions are the SEND instruction from the CLICK PLC and are given as examples only. Please refer to Chapter 7 for the details of sending strings from other PLC models.*

8

Using Modbus to Update the String Value

The String Value may also be set by writing directly to the associated Modbus address. See Chapter 7 - Sending Messages from your PLC to the ViewMarq for more information on writing to Modbus addresses in the ViewMarq Display.

Following is a table of the corresponding ViewMarq String Variables and Slave Modbus addresses.

ViewMarq String	*Modbus Address*
String Variable #1	400200
String Variable #2	400250
String Variable #3	400300
String Variable #4	400350
String Variable #5	400400
String Variable #6	400450
String Variable #7	400500
String Variable #8	400550
String Variable #9	400600
String Variable #10	400650
String Variable #11	400700
String Variable #12	400750
String Variable #13	400800
String Variable #14	400850
String Variable #15	400900
String Variable #16	400950

Numeric Variables

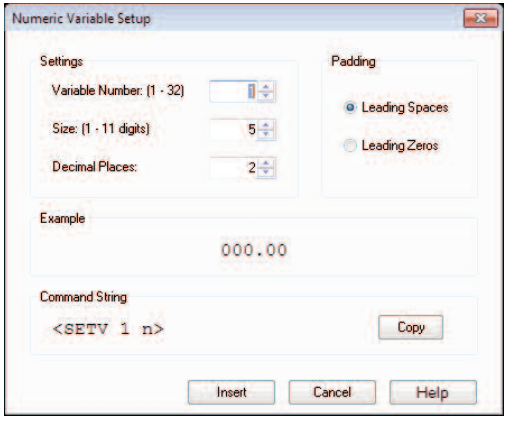
Numeric Variables are used to update Numeric values within a message without changing or resending the entire message.

Here are a few key items to remember when using Numeric variables:

- Numeric Variables can be inserted anywhere in the message.
- Up to 32 Numeric variables are available for use.
- Numeric variables are 32 bit, bi-polar, two compliment.
- Numeric variable range is - 2147483647 to 2147483647.
- Up to 10 Implied decimal places can be configured for each instance of a Numeric variable.
- If a Numeric variable has not been set, then zeroes or spaces will be displayed in the message.
- The <SETV n 1234> command is used to set the value of a Numeric variable.

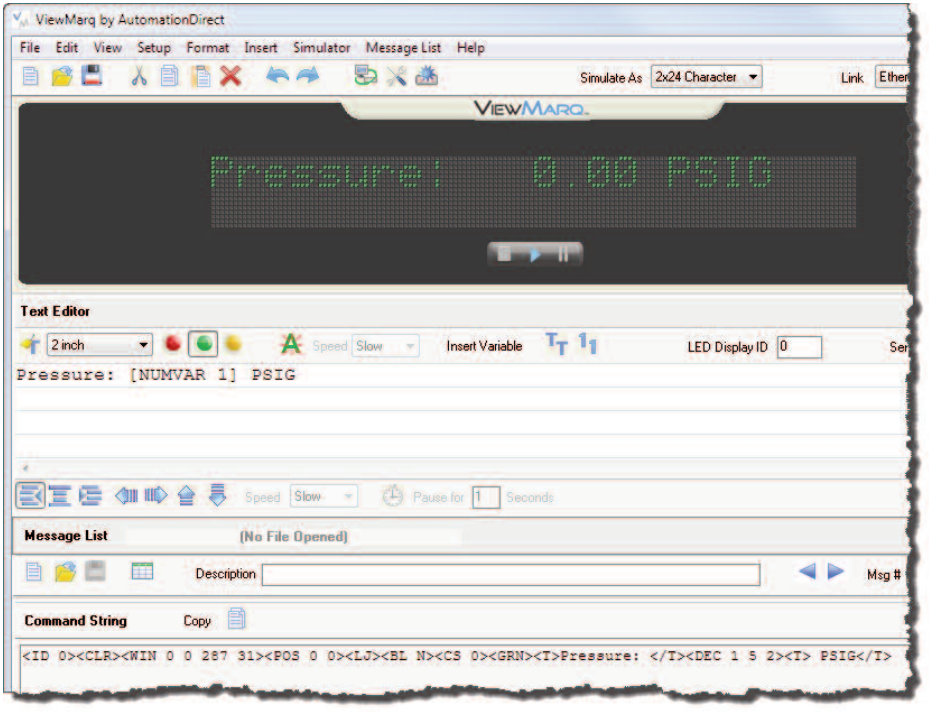
Numeric Variable Setup

The Numeric Variable Setup dialog is shown below.



1) Select the Variable Number (1 to 32).
2) Select the Size of the Number (10 digits maximum, 11th place for sign).
3) Select the Implied Decimal place up to 10.
4) Select Leading Spaces or Leading Zeros.
5) Select the **Copy** button to copy the <SETV 1 n> command onto the PC clipboard (this will be used later to set the value of the variable from the PLC).
6) Select the **Insert** button to insert the variable placeholder into your message.

The result can be seen below. The value of the numeric variable is not set, so there are zeros with leading spaces in the area that it occupies.

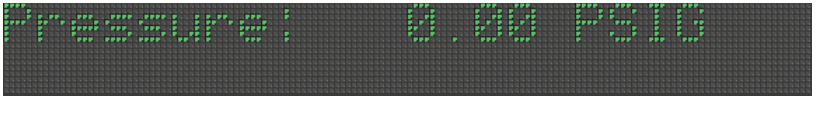


7) Copy and Paste the Command String into the PLC instruction.

Send (Port:2)	ASCII
Type	Static
Byte Swap	None
Terminate Code	CR
Send Message	
"<ID 1><CLR><WIN 0 0 287 31><POS 0 0><LJ><BL N><CS 0><GRN><T>Pressure:</T><DEC 1 5 2><T> PSIG</T>"	

Attention!: Command Strings should be sent at least 100 ms apart.

When the above instruction is executed, the display will look like this.



Setting Numeric Variable Value

The value of the Numeric Variable gets set from the PLC in one of two methods::

1) 1) ASCII Command String - <SETV 1 n>

2) Modbus Register Write

Using an ASCII Command String to Update the Numeric Value

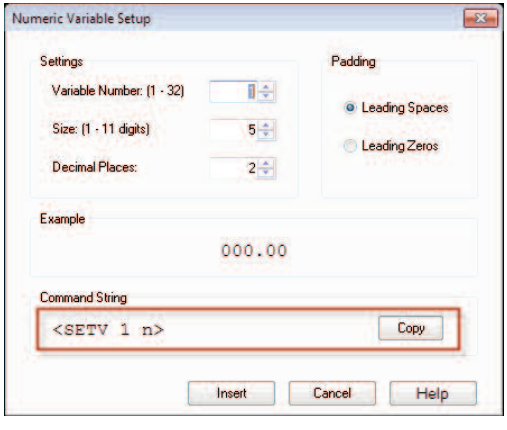
To update Numeric Variable data using an ASCII Command string, use the Set String command.

<SETV 1 n>

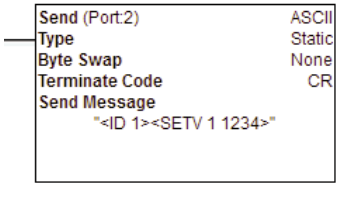
Where 1 is the variable number (1 – 32) and n is the actual numerical data without decimals.

Example 1 – Set Numeric Value

1) From the Numeric Variable Setup dialog, copy the Set String command.



2) Paste this Command String in the PLC instruction; Add the ID command and numerical data to be displayed as shown below.



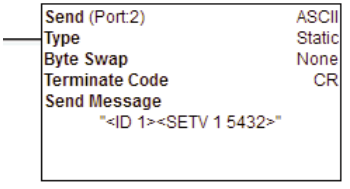
ATTENTION

Attention!: Variables should be updated no more than every 100ms.

When this instruction is executed, the display will look like this.

Example 1 – Set New Numeric Value

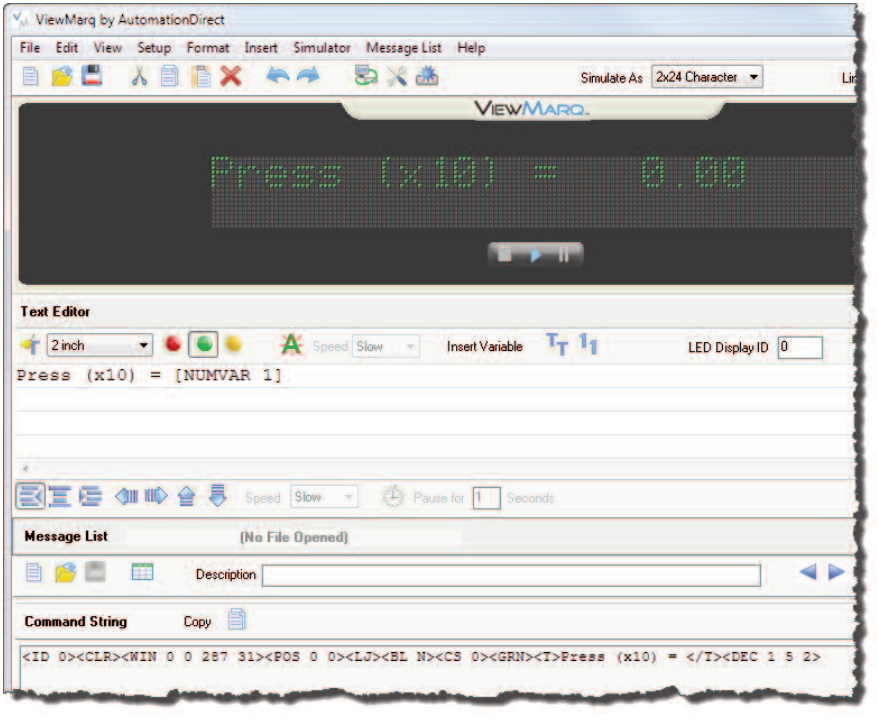
If the instruction below with a different n="5432" is executed…



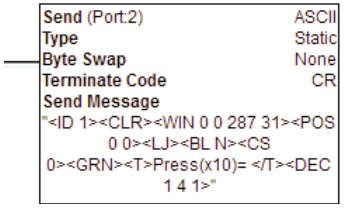
…the message will look like this.

Example 3 – Numerical Variable used in another String Command

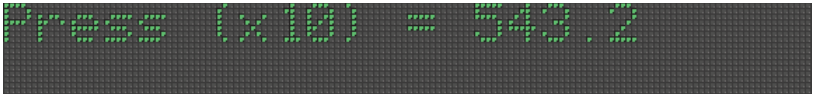
If another String is sent to the ViewMarq LED Display using the same String Variable, the same value will be displayed.



Copy and Paste the Command String into the PLC instruction.



When the above instruction is executed, the display will look like this.



Variable #1 is still equal to "5432" until it is set by another <SETV> command.

NOTE: *The conditions for executing the instructions above depend upon the controller used. The above instructions are the SEND instruction from the CLICK PLC and are given as examples only. Please refer to Chapter 7 for the details of sending strings from other PLC models.*

8

Using Modbus to Update the String Value

The Numeric Value may also be set by writing directly to the associated Modbus address. See Chapter 7 - Sending Messages from your PLC to the ViewMarq for more information on writing to Modbus addresses in the ViewMarq Display.

Below is a table of the corresponding ViewMarq Numeric Variables and Slave Modbus addresses.

ViewMarq Variable	*Modbus Address*	
	High Word	Low Word
Numeric Variable #1	400100	400101
Numeric Variable #2	400102	400103
Numeric Variable #3	400104	400105
Numeric Variable #4	400106	400107
Numeric Variable #5	400108	400109
Numeric Variable #6	400110	400111
Numeric Variable #7	400112	400113
Numeric Variable #8	400114	400115
Numeric Variable #9	400116	400117
Numeric Variable #10	400118	400119
Numeric Variable #11	400120	400121
Numeric Variable #12	400122	400123
Numeric Variable #13	400124	400125
Numeric Variable #14	400126	400127
Numeric Variable #15	400128	400129
Numeric Variable #16	400130	400131
Numeric Variable #17	400132	400133
Numeric Variable #18	400134	400135
Numeric Variable #19	400136	400137
Numeric Variable #20	400138	400139
Numeric Variable #21	400140	400141
Numeric Variable #22	400142	400143
Numeric Variable #23	400144	400145
Numeric Variable #24	400146	400147
Numeric Variable #25	400148	400149
Numeric Variable #26	400150	400151
Numeric Variable #27	400152	400153
Numeric Variable #28	400154	400155
Numeric Variable #29	400156	400157
Numeric Variable #30	400158	400159
Numeric Variable #31	400160	400161
Numeric Variable #32	400162	400163